

1. A remote maintenance system of an air-conditioner comprising: a control device (10) which controls functions of cooling, heating, humidification, dewetting, etc. depending on working conditions; a central monitoring system (2) which controls the change of set value of the control device (10), the driving and stopping of the air-conditioner, etc., and displays alert states of respective part or outputs operation data to a printer (3), and in which a dial pressure modem is built for communication with a computer system (4) at a remote site; said computer system (4) which is connected with said central monitoring system (2) on line to monitor and control the operation of the control device (10) of the air-conditioner at the remote site;

characterized by temperature sensors (21) installed in the high pressure and low pressure areas of the refrigerant pipes of the air-conditioner, respectively;

a compressor control device to calculate pressure data by converting refrigerant temperatures to refrigerant pressures at the MPU (12) of the control device (10) on the bases of the signals from the sensors (21) and to stop the operation of compressors (7a) when the calculated pressures are greater than a certain value;

a main power current monitoring device, in which a current transducer (31) is installed in the main power line to measure the current required during the operation of the air-conditioner, to convert the detected current to a voltage signal in a current/voltage convert (32), determining a abnormality of the current of operation at the MPU (12) of the control device (10), and to stop the operation of the air-conditioner when abnormal current flows;

a protection circuit resetting device to reset over current relays (41) at a remote site by controlling a relay (42) and turning on/off the power supply of the over current relays (41) when the over current relays (41) of the overload protection circuit, open phase protection circuit, etc. of the supply fan (6a), compressor (7a), etc. operate and thus the operation of the air-conditioner stops;

a condensed air cleaner for removing dust collected in the filter by

installing a filter in the air inlet part of the condenser (7c) of the air-conditioner which is disposed at the outside of the building and rotating reversely the motor of the condenser for a certain period of time after some delay from the stop of the cooling operation; and

a test mode checking device for determining abnormal operation by checking the driving current and the refrigerant pressure state of the respective part by switching on/off separately the electromagnetic switches including all kinds of the compressors, the motor, a heater etc. and comparing the driving current and the rated current.

2. The remote maintenance system of an air-conditioner of claim 1, said control device (10) comprising: a program ROM (11) in which a program for the operation of the air-conditioner is stored;

said MPU (12) for controlling the whole stroke of the air-conditioner;

a power supply (13) for supplying the electric power;

a LCD panel monitor (14) in which the operating state and the input/output data (temperature, humidity, preset temperature, preset humidity, etc.) of each apparatus including compressor, condenser, etc. which consist of the air-conditioner are displayed, and in which keypad controller (4key pad control) to which 4 key signals for data input are inputted is built;

a control output module (15) for outputting the control signal;

a control output part (16) connected to said control output module (15) to switch on/off specific devices;

a signal input part (17) connected to specific devices to receive the state data from said specific devices;

an alert signal input module (18) for interfacing the signal inputted from the signal input part (17); and

a communication port (19) for communication with other computer or the central monitoring system (2).

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(54) REMOTE UPKEEP AND MAINTENANCE SYSTEM OF AIR CONDITIONER

(57) Abstract:



PURPOSE: A remote upkeep and maintenance system of an air conditioner is provided to keep up and maintain the air conditioner economically by saving the time and the cost and to maintain the air conditioners in bulk.

CONSTITUTION: A remote upkeep and conservation system of an air conditioner comprises: a control unit(10) to control the cooling, heating, humidification and dehumidification according to an operating condition; a central monitor(2) to control the change of the set point of the control unit and the operation and stoppage of an air conditioner, to indicate the warning of each unit, and to output the operation data via a printer(3); and a computer system(4) connected with the central monitor by the on-line system to sense the operation of the control unit connected with the central monitor at a remote area.

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